

WHAT IS CLAIMED IS:

1. A stent graft prosthesis mounted to a deployment device and adapted to be deployed in a curved lumen, the curved lumen having an inner side and an outer side of the curve, the stent graft prosthesis being temporarily mounted to the deployment device at at least one end of the prosthesis by a retention arrangement, the retention arrangement including a retention of the stent graft prosthesis to the deployment device at a plurality of points of the circumference of the proximal end of the stent graft prosthesis, there being a greater circumferential distance between two adjacent retention points than other of the points, whereby when the deployment device is deployed in the curved lumen the greater circumferential distance is on the inner side of the curve.
2. A stent graft prosthesis mounted to a deployment device as in Claim 1 wherein the retention arrangement includes a fastening to a release mechanism at at least two points of the circumference of the prosthesis whereby a larger and a smaller fold of the graft material is formed.
3. A stent graft prosthesis mounted to a deployment device as in Claim 1 wherein the retention arrangement includes three retention points so that one larger and two smaller folds of the graft material are formed.
4. A stent graft prosthesis mounted to a deployment device as in Claim 1 wherein the retention arrangement provides one larger lobe and at least one smaller lobe of the proximal end of the graft material wherein the larger lobe is on the inner side of the curve when the deployment device is deployed in the curved lumen.

5. A stent graft prosthesis mounted to a deployment device as in Claim 1 wherein the deployment device includes a guide wire catheter and a trigger wire catheter coaxially around the guide wire catheter with trigger wires passing along the annular space between the guide wire catheter and the trigger wire catheter and exiting through apertures at the retention points and the trigger wires are engaged with the graft material to provide the retention points.

6. A stent graft prosthesis mounted to a deployment device as in Claim 5 wherein the apertures are equally spaced around the trigger wire catheter.

7. A stent graft prosthesis mounted to a deployment device as in Claim 4 wherein the trigger wires are engaged to the graft material by loops of thread-like material.

8. A stent graft prosthesis mounted to a deployment device as in Claim 7 wherein the loops of thread-like material are adapted to remain with the graft material after deployment.

9. A deployment device and stent graft prosthesis temporarily mounted thereto and adapted to be deployed in a curved lumen, the curved lumen having an inner side and an outer side of the curve, the deployment device including a deployment catheter and a release mechanism, the stent graft prosthesis comprising a tube of graft material having a first end and a second end and being mounted to the deployment device at at least its first end by a retention arrangement, the retention arrangement including a retention to the deployment device at a plurality of points of the circumference of the proximal end of the stent graft prosthesis, there being a greater circumferential distance between two adjacent retention points

than other of the points, and the retention points being provided by the release mechanism being engaged with the graft material, whereby when the deployment device is deployed in the curved lumen the greater circumferential distance is on the inner side of the curve.

5 10. A stent graft prosthesis mounted to a deployment device as in Claim 9 wherein the retention arrangement includes a fastening to a release mechanism at at least two points of the circumference of the prosthesis whereby a larger and a smaller fold of the graft material is formed.

10 11. A stent graft prosthesis mounted to a deployment device as in Claim 9 wherein the retention arrangement includes three retention points so that one larger and two smaller folds of the graft material are formed.

15 12. A stent graft prosthesis mounted to a deployment device as in Claim 9 wherein the retention arrangement provides one larger fold and at least one smaller fold of the proximal end of the graft material wherein the larger fold is on the inner side of the curve when the deployment device is deployed in the curved lumen.

20 13. A stent graft prosthesis mounted to a deployment device as in Claim 9 wherein the deployment catheter includes a guide wire catheter and a trigger wire catheter coaxially around the guide wire catheter and the release mechanism includes trigger wires passing along the annular space between the guide wire catheter and the trigger wire catheter and exiting through apertures in the trigger wire catheter.

25 14. A stent graft prosthesis mounted to a deployment device as in Claim 13 wherein the apertures are equally spaced around the trigger wire catheter.

15. A stent graft prosthesis mounted to a deployment device as in Claim 13 wherein the trigger wires are engaged to the graft material by loops of thread-like material.

16. A stent graft prosthesis mounted to a deployment device as in
5 Claim 15 wherein the loops of thread-like material are adapted to remain with the graft material after deployment.

17. A stent graft prosthesis mounted to a deployment device as in Claim 9 wherein the stent graft prosthesis includes stents of self expanding zig zag Z stents and the tube of graft material.

10 18. A stent graft prosthesis mounted to a deployment device as in Claim 16 wherein the retention is by sutures tied to trigger wires on the deployment device and around bends of the zig zag Z stents on the stent graft.

19. A stent graft prosthesis mounted to a deployment device as in
15 Claim 14 wherein further retention points are provided along the length of the stent graft prosthesis such as at the second end of the stent graft prosthesis.

20. A method of mounting of a stent graft prosthesis to a deployment device for deployment of the stent graft prosthesis in to a curved lumen
20 having an inner side and an outer side of the curve, the method including the step of mounting the stent graft prosthesis to a deployment device so that a first end and a second end of the prosthesis are separately retained to the deployment device, the retention at the first end being by the stent graft prosthesis being retained at a plurality of points of the circumference of the
25 stent graft prosthesis to the deployment device, there being a greater

circumferential distance between the two adjacent retention points than others of the retention points and whereby in use the greater circumferential distance is placed on the inner side of the curve.

21. A method of deploying a stent graft prosthesis in the thoracic arch
5 of a patient, the thoracic arch having a curvature defining an inner curve and an outer curve, the stent graft prosthesis being mounted on a deployment device under a slidable sheath and being retained to the deployment device at at least a proximal end of the stent graft prosthesis, the proximal retention being provided by retention at a number of points around the circumference
10 of the stent graft prosthesis to provide a plurality of folds between the retention points so that one of the folds of graft material between adjacent retention points is larger than other of the folds, the method of deploying including the steps of deploying the deployment device into the aorta such that the larger of the folds of the graft material is adjacent to the inner curve,
15 withdrawing the sheath to allow the stent graft prosthesis to expand under the influence of self expanding stents except at the proximal end so that blood flows through the larger fold at the proximal end into the interior of the stent graft prosthesis, releasing the proximal end of the stent graft prosthesis thereby allowing the graft to fully expand against the walls of the aorta and
20 withdrawing the deployment device.

22. A deployment device for deploying a stent graft prosthesis into a thoracic arch of a patient, the stent graft prosthesis being temporarily mounted to the deployment device and adapted to be deployed in the thoracic arch, the thoracic arch having a curved lumen having an inner side
25 and an outer side of the curve, the stent graft prosthesis being mounted to the deployment device at least the proximal end of the prosthesis by a retention arrangement, the retention arrangement including a retention to the deployment device at a plurality of points of the circumference of the

proximal end of the stent graft prosthesis, there being a greater circumferential distance between two adjacent retention points than other of the points, whereby when the deployment device is deployed in the curved lumen the greater circumferential distance is on the inner side of the curve.

23. An introducer for introducing a stent graft prosthesis into a curved lumen of a patient, the introducer including an arrangement for temporarily fixing the prosthesis to the introducer while it is being introduced into the lumen, wherein three or more positions on one end of the prosthesis are to be fixed to the arrangement, wherein the circumferential distance between two adjacent ones of those positions is greater than the circumferential distance between other adjacent positions of those positions and wherein the introducer serves to introduce the prosthesis into the lumen with said two adjacent positions next to the inner side of the curve of the lumen.